



N1640024  
GNM/oab

Paper No.: \_\_\_\_\_

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

Inventor: BARU FASSIO, Marcelo Daniel

Title: **IMPLANTABLE SIGNAL AMPLIFYING CIRCUIT FOR ELECTRONEUROGRAPHIC RECORDING**

Filed: 19 November 2001

Serial No.: 09/988,112

Date: 18 April 2002

To: Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

**LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT**  
**[Form PTO-1449 (Modified)]**

**United States Patent Documents**

Examiner	ID	Patent No.	Issue Date	Inventor(s)	Class	Sub-Cl	Filing Date
M	US: 1	4,750,499	Jun 14 1988	Hoffer			
	US: 2	5,339,285	Aug 16 1994	Straw			
	US: 3	5,861,778	Jan 19 1999	Louagie et al.			

**Other Art**

Examiner	ID	Author, Title, Date, Pertinent Pages, etc.
M	OA: 1	J. A. Hoffer and K. Kallesøe, "How to Use Nerve Cuffs to Stimulate, Record or Modulate Neural Activity", Neural Prostheses for Restoration of Sensory and Motor Function, Chapter 5, CRC Press, 2000.
	OA: 2	K. Papathanasiou and T. Lehmann, "An Implantable CMOS Signal Conditioning System for Recording Nerve Signals with Cuff Electrodes", <i>Proceedings of the IEEE International Symposium on Circuits and Systems</i> , pp. V 281-284, Switzerland, May 2000.
	OA: 3	T. Sinkjær et al., "Electroneurographic (ENG) Signals from Intradural S3 Dorsal Sacral Nerve Roots in a Patient with SupraSacral Spinal Cord Injury", <i>Proceedings of the 5th Annual Conference of the International Function Electrical Stimulation Society</i> , pp. 361-364, Denmark, June 2000.

	OA: 4	N. Donaldson et al., "An Implantable Telemeter for Long-Term Electroneurographic Recordings in Animals and Humans", <i>Proceedings of the 5<sup>th</sup> Annual Conference of the International Function Electrical Stimulation Society</i> , pp. 378-381, Denmark, June 2000.
	OA: 5	K.D. Strange and J.A. Hoffer, "Gait Phase Information Provided by Sensory Nerve Activity During Walking: Applicability as State Controller Feedback for FES", <i>IEEE Transactions on Biomedical Engineering</i> , vol. 46, no. 7, pp. 797-809, July 1999.
	OA: 6	D.M. Binkley et al., "A Micropower CMOS, Direct-Conversion, VLF Receiver Chip for Magnetic-Field Wireless Applications", <i>IEEE Journal of Solid-State Circuits</i> , vol. 33, no. 3, pp. 344-358, March 1998.
	OA: 7	F. Silveira, D. Flandre and P. Jespers, "A gm/I <sub>D</sub> Based Methodology for the Design of CMOS Analog Circuits and Its Application to the Synthesis of a Silicon-On-Insulator Micropower OTA", <i>IEEE Journal of Solid-State Circuits</i> , vol. 31, no. 9, pp. 1314-1319, September 1996.
	OA: 8	C. C. Enz et al., "An Analytical MOS Transistor Model Valid in All Regions of Operation and Dedicated to Low-Voltage and Low-Power Applications", <i>Analog Integrated Circuits and Signal Processing</i> , no. 8, pp. 83-114, 1995.
	OA: 9	Z.M. Nikolić et al., "Instrumentation for ENG and EMG Recordings in FES Systems", <i>IEEE Transactions on Biomedical Engineering</i> , vol. 41, no. 7, pp. 703-706, July 1994.
	OA: 10	M.K. Haugland and J.A. Hoffer, "Slip Information Provided by Nerve Cuff Signals: Application in Closed-Loop Control of Functional Electrical Stimulation", <i>IEEE Transactions on Rehabilitation Engineering</i> , vol. 2, no. 1, pp. 29-36, March 1994.
	OA: 11	A.R. Alvarez, "BiCMOS Technology and Applications", Second Edition, Kluwer Academic Publishers, 1993.
	OA: 12	E.A. Vittoz, "Micropower Techniques, Design of VLSI Circuits for Telecommunications and Signal Processing", Eds. J.E. Franca and Y.P. Tsividis, Prentice Hall, 1993.
	OA: 13	G. Nicollini and C. Guiardiani, "A 3.3-V 800-nV <sub>rms</sub> Noise, Gain-Programmable CMOS Microphone Preamplifier Design Using Yield Modeling Technique", <i>IEEE Journal of Solid-State Circuits</i> , vol. 28, no. 8, pp. 915-921, August 1993.
	OA: 14	E. Säckinger et al., "A General Relationship Between Amplifier Parameters, and Its Application to PSRR Improvement", <i>IEEE Transactions on Circuits and Systems</i> , vol. 38, no. 10, October 1991.
	OA: 15	E. Säckinger and W. Guggenbühl, "A Versatile Building Block: The CMOS Differential Difference Amplifier", <i>IEEE Journal of Solid-State Circuits</i> , vol. 22, no. 2, pp. 287-294, April 1987.
	OA: 16	R. Gregorian and G.C. Temes, "Analog MOS Integrated Circuits for Signal Processing", John Wiley & Sons, 1986.
	OA: 17	R.P. Jindal, "Noise Associated with Distributed Resistance of MOSFET Gate Structures in Integrated Circuits", <i>IEEE Transactions on Electron Devices</i> , vol. ed-31, no. 10, pp. 1505-1509, October 1984.
	OA: 18	P.R. Gray and R.G. Meyer, "MOS Operational Amplifiers Design - a Tutorial Overview", <i>IEEE Journal of Solid-State Circuits</i> , vol. sc-17, no. 6, pp. 969-982, December 1982.

Examiner:

Nasser

Date Considered:

4/30/04

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance **and not** considered. Include copy of this form with next communication to applicant.



INFORMATION CITED BY APPLICANT THAT MAY BE MATERIAL TO THE  
PROSECUTION OF THE SUBJECT APPLICATION

Applicant: M.D. Baru Fassio Attorney Docket No. NEUR120820

Application No.: 09/988,112 Group Art Unit: 3736

Filed: November 19, 2001 Examiner: R.L. Nasse

Title: IMPLANTABLE SIGNAL AMPLIFYING CIRCUIT FOR  
ELECTRONEUROGRAPHIC RECORDING

RECEIVED  
JUL 14 2003  
10001

## U.S. PATENT DOCUMENTS

13700

*Examiner	Cite	Document No.	Kind	Date	Name
Initials	No.		Code	(mm/dd/yyyy)	
M	U4	3,927,377	A	12/16/1975	Iwazumi

## FOREIGN PATENT DOCUMENTS

None.

## **OTHER INFORMATION**

(Including Author, Title, Date, Pertinent Pages, Etc.)

*Examiner Initial	Cite No.	
<u>M</u>	O19	Kim, K.H and S.J. Kim, "Noise Characteristic Design of CMOS Source Follower and Voltage Amplifier for Active Semiconductor Microelectrodes for Neural Signal Recording," <i>Medical &amp; Biological Engineering &amp; Computing</i> 38:469-472, 2000.

Examiner Date Considered  
Kissler 4/30/07

\*Examiner: Initial if reference considered, whether or not citation is in conformance with M.P.E.P. § 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

GSF:la]

LAW OFFICES OF  
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC  
1420 Fifth Avenue  
Suite 2800  
Seattle, Washington 98101  
206 682 8100